

US EPA ARCHIVE DOCUMENT

Responsiveness Summary for Tampa:

- Total Maximum Daily Loads for Dissolved Oxygen and Nutrients in Owen Creek (WBID 1933) and Myakka River (WBID 1981B)
- Total Maximum Daily Loads for Dissolved Oxygen and Nutrients in Cedar Creek (WBID 1926)
- Total Maximum Daily Loads for Dissolved Oxygen and Nutrients in Mud Lake Slough (WBID 1958)
- Total Maximum Daily Loads for Dissolved Oxygen and Nutrients in McKay Bay (WBID 1584B), Palm River (1536E), and Ybor City Drain (1584A)

EPA Region 4

March 2013

General response to comments regarding status of NNC in Florida:

Commenters on this TMDL and other proposed TMDLs addressing nutrients in Florida have raised questions about whether and how these TMDLs are impacted by ongoing activities to establish numeric nutrient criteria in Florida.

In 1979, FDEP adopted narrative criteria for nutrients applicable to waters designated as Class I (Potable Water Supply), Class II (Shellfish Propagation or Harvesting), and Class III (Recreation and for propagation and maintenance of a healthy, well-balanced population of fish and wildlife). See paragraphs 62-302.530(47)(a) and (b), F.A.C. FDEP recently adopted numeric nutrient criteria (NNC) for many Class I, II, and III waters in the state, including streams. See sections 62-302.531 and .532, F.A.C. The State's NNC numerically interpret part of the state narrative criteria for nutrients, at paragraph 62-302.530(47)(b), F.A.C., which provides that nutrients may not cause an imbalance of flora and fauna. FDEP submitted its NNC to EPA for review pursuant to section 303(c) of the CWA and on November 30, 2012, EPA approved those criteria as consistent with the requirements of the CWA. The state criteria, however, are not yet effective for state law purposes.

Also, in November 2010, EPA promulgated numeric nutrient criteria for Class III inland waters in Florida, including streams, pursuant to a Consent Decree in Florida Wildlife Federation, et. al. v. EPA, No. 4:08-cv-00324-RH-WCS (N.D. Fla.). On February 18, 2012, the streams criteria were remanded back to EPA by the District Court for further explanation. On November 30, 2012, EPA re-proposed its stream NNC for those flowing waters not covered by Florida's NNC rule. Those criteria have not been finalized.

Therefore, for streams in Florida, the applicable nutrient water quality standard for CWA purposes remains the narrative criteria. While FDEP's nutrient rule is not yet effective for state law purposes, EPA believes that FDEP's numeric nutrient criteria represent FDEP's most recent interpretation of paragraph 62-302.530(47)(b), F.A.C. Also, the other part of the state narrative criteria for nutrients, at paragraph 62-302.530(47)(a), F.A.C., remains applicable to all Class I, II, and III waters in Florida.¹ Paragraph 62-302.530(47)(a) requires nutrients to be limited as necessary to prevent violations of other Florida water quality standards.

In developing the TMDLs in this response summary, EPA considered both paragraphs 62-302.530(47)(a) and (b). The nutrient end point for this TMDL represents the level of nutrients that will prevent nutrients from causing or contributing to nonattainment of the State's dissolved oxygen criteria pursuant to paragraph 62-302.530(47)(a). That endpoint, which requires that nutrients be reduced to natural background levels, was determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

¹ Paragraph 62-302.530(47)(a), F.A.C. will remain applicable to all Class I, II, and III waters even after FDEP's nutrient rule becomes effective. See subsection 62-302.531(1), F.A.C.

1 GENERAL COMMENTS

Comment ID T0509.001.007

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 1

<<The following comment applies to the TMDL for Cedar Creek (WBID 1926), as well as the TMDLs for Owen Creek (WBID 1933), Myakka River (WBID 1981B), and Mud Lake Slough (WBID 1958)..>>

Manatee County staff continues to work closely with Florida Department of Environmental Protection (FDEP) staff in evaluating the data and proposed TMDLs for these and other water bodies throughout the county. Some of the above issues have also been communicated to the FDEP under separate correspondence. Manatee County requests that EPA delay adoption and implementation of these TMDLs until the issues we have identified have been resolved.

Response

EPA encourages the county to work with the Florida Department of Environmental Protection on evaluating and developing and alternative TMDL once the information becomes available. EPA is compelled by a consent decree to complete this TMDL.

2.A WATERSHED DESCRIPTION

Comment ID T0509.001.006

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 2.a

<<The following comment applies to the TMDL for Cedar Creek (WBID 1926)..>>

Section 3 of the TMDL for Cedar Creek includes a description of principle communities within the greater Manatee River watershed, "including Bradenton, West Bradenton, Palmetto, Ellenton, and Memphis." The Manatee River watershed does not include a community called "Memphis."

Response

The final TMDL document will be updated to acknowledge this comment.

3.A WATER QUALITY EVALUATION

Comment ID T0509.001.005

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 3.a

<<The following comment applies to the TMDL for Cedar Creek (WBID 1926).>>

The Cedar Creek WBID lies within the Evers Reservoir Watershed Overlay District. Section 604 of the Manatee County Land Development Code imposes restrictions and requirements designed to be protective of water quality in this potable-source watershed. Stormwater systems within the overlay districts must meet Outstanding Florida Waters (OFW) design criteria, and septic tank locations are subject to additional setback criteria. Since implementation of these protective measures in the early 1990's, data indicate that water quality is improving in these watersheds. Based on these observations, Manatee County recommends further study of the Cedar Creek subbasin to evaluate the need for a TMDL.

Response

EPA is aware of the protective measures that are taking place in the watershed. Because the waterbody remains on the 303(d) list as impaired, EPA had to develop a TMDL because of the consent decree. Because the TMDL determination used a long time period for determining the reductions, credit can be given for restoration activities.

Comment ID T0701.001.011

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

6. No relationship between TN, TP, biochemical oxygen demand (BOD) and low DO is demonstrated.

Response

EPA uses a mechanistic water quality model to predict the impacts of nutrient loadings on dissolved oxygen and productivity. This model has stoichiometric equations that are used to determine impacts on water quality.

3.A.1 NUTRIENTS

Comment ID T0509.001.001

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 3.a.1

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933), Myakka River (WBID 1981B), Mud Lake Slough (WBID 1958) and Cedar Creek (1926).>>

Total phosphorus (TP) is cited as one of the nutrient pollutants causing impairments in the Owen Creek (1933), Myakka River (1981B), Mud Lake Slough (1958), and Cedar Creek (1926) watersheds. Phosphorus is prevalent and variable in the sediments underlying Manatee County in a region known as "Bone Valley." Because of the naturally higher phosphorus concentrations in this region, the

county's surface waters are considered "nitrogen limited."

Response

The parameterization of the watershed and water quality model that was used for developing this TMDL was parameterized to include the impacts of the naturally higher phosphorus concentrations in this region. EPA routinely considers both nutrient (phosphorus and nitrogen) when developing this type of TMDL.

Comment ID T0601.001.001

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.1

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

1. The water quality problems in WBID 1933 are specific to one sampling station near an operating dairy. Additional investigation of the watershed loads upstream of this station is needed.

Response

The Impaired Waters Rule Database Run 46 lists two stations that were used to assess the WBID and develop the TMDL. When and if additional information becomes available for this WBID this TMDL could be revisited.

Comment ID T0601.001.005

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.1

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

1. The data analyses presented for total nitrogen (TN) and total phosphorus (TP) suggest that water quality problems in WBID 1933 are specific to one sampling location near the C. Dakin Dairy. When data from this station are removed, both TN and TP values drop to below the proposed West Central Florida numeric nutrient criteria of 1.65 mg/L for TN and 0.49 mg/L for TP. In addition, 16 of 21 DO violations occurred at this station (100 percent of measurements) between 2003 and 2009. Data for WBID 1981B do not indicate excessive TN and TP are present when compared to proposed numeric nutrient criteria, but biochemical oxygen demand (BOD) levels are elevated. FDEP verified WBID 1981B as impaired for nutrients based on Chlorophyll a (Chl a) and for DO with BOD as the causative pollutant. The following table presents total nitrogen (TN) and total phosphorus (TP) data from both WBIDs, with and without the dairy sampling station at WBID 1933, for the period 2003 through 2009/2011. <<See table in original comment letter.>>

Response

The TMDL was developed using all of the data that was available for the WBID. If it is determined during the implementation of this TMDL that the dairy is totally responsible for the impairment, all reductions should be applied there.

3.A.2 DISSOLVED OXYGEN

Comment ID T0601.001.006

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

2. One aspect of many Florida streams is that they can have high color and associated high natural organic carbon levels. Both FDEP and EPA have documented these systems as having low DO at times. WBID 1981B has a high percentage of wetlands (46 percent), which would contribute to a high color or black water system. Prior to mandating reductions in nutrients, EPA needs to provide assurance that the low DO values are the result of anthropogenic influences and not simply a natural condition. The percent reductions identified through the "natural" condition loading modeling simply do not make sense after looking at the TN and TP data. It is important when developing TMDLs that, regardless of what the models may show, if the reductions are not supported by logic and an examination of the available data, they should be reconsidered.

Response

In the development of this TMDL EPA has determined that Florida's dissolved oxygen standard is not being met under natural conditions. EPA does not conclude that the dissolved oxygen standard is not being met because of anthropogenic sources; rather no anthropogenic sources can cause a further decrease in dissolved oxygen. There are several processes that could be pursued here: 1) development of a site specific alternate criteria 2) a use attainability study, 3) reclassification of the waterbody into Class III Limited Use.

Comment ID T0601.001.007

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

3. The data analyses presented appear to indicate that at least portions of the systems may be healthy and meeting their designated use and that the low DO levels may be natural. This needs further investigation, particularly with respect to WBID 1933 as noted above.

Response

EPA agrees that portions of the waterbody may be healthy. For the waterbody to be considered meeting its designated use it must meet all of the water quality standards.

Comment ID T0701.001.001

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

1. While the system does show episodes of low DO values, Chlorophyll a (Chl a) levels in the system are not elevated [<20 micrograms per liter ($\mu\text{g/L}$)]. Additionally, biological assessments indicate that generally, these systems are healthy even with the low DO values.

Response

See response to comment T0601.001.007

Comment ID T0701.001.009

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

4. One aspect of many Florida streams is that they can have high color and associated high natural organic carbon levels. Both FDEP and EPA have documented these systems as having low DO at times. Color in Mud Lake Slough averaged 153 PCU between 2001 and 2010. More than 36 percent of the watershed is forested or wetlands, which would contribute to a high color or black water system. Prior to mandating large reductions in nutrients, EPA needs to provide assurance that the low DO values are the result of anthropogenic influences and not simply a natural condition. The percent reductions identified through the "natural" condition loading modeling simply do not make sense after looking at the TN and TP data. It is important when developing TMDLs that regardless of what the models may show, if the reductions are not supported by logic and an examination of the available data, they should be reconsidered.

Response

See response to comment T0601.001.006

In the development of this TMDL EPA has determined that Florida's dissolved oxygen standard is not being met under natural conditions. EPA does not conclude that the dissolved oxygen standard is not being met because of anthropogenic sources; rather no anthropogenic sources can cause a further decrease in dissolved oxygen. There are several processes that could be pursued here: 1) development of a site specific alternate criteria 2) a use attainability study, 3) reclassification of the waterbody into Class III Limited Use.

Comment ID T0701.001.012

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

7. The data analyses presented appear to indicate that the systems may be healthy and meeting their designated use and that the low DO levels may be natural. This needs further investigation.

Response

See response to comment T0601.001.007

EPA agrees that portions of the waterbody may be healthy. For the waterbody to be considered meeting its designated use it must meet all of the water quality standards.

3.A.3 BIOLOGY

Comment ID T0701.001.010

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.3

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

5. Mud Lake Slough is not impaired for biology as indicated by numerous passing Stream Condition Indices (SCIs).

Response

The TMDL for Mud Lake Slough was developed for nutrients and biochemical oxygen demand to meet the State's dissolved oxygen criteria.

3.A.4 OTHER WATER QUALITY

Comment ID T0701.001.007

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.4

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

2. Examination of the Chl a data from Impaired Waters Rule (IWR) Run 45 indicates the Chl a levels are generally below 15.0 µg/L, with a small number of measurements exceeding 20 µg/L. Given that the Florida Department of Environmental Protection (FDEP) identifies streams with annual average Chl a levels greater than 20 µg/L as candidates for impairment, the Chl a levels here would not be deemed "high."

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

4.A CURRENT WQS

Comment ID T0107.001.001

Author Name: Berry Andrew

Organization: Hillsborough County

Issue Category: 4.a

<<The following comment applies to the TMDLs for McKay Bay (WBID 1584B), Palm River (WBID 1536E), and (Ybor City Drain) 1584A.>> The Environmental Protection Agency (EPA) proposed dissolved oxygen and nutrient TMDLs on June 29, 2012, for McKay Bay (WBID 1584B), Palm River (WBID 1536E), and Ybor City Drain (WBID 1584A). In the TMDL document, the issues with the present dissolved oxygen criteria are acknowledged. Hillsborough County agrees with this assertion and will work with local stakeholders to modify the TMDL once revised dissolved oxygen criteria are promulgated by the Florida Department of Environmental Protection. Hillsborough County appreciates EPA's acknowledgement of these issues in the TMDL document.

Response

EPA has encouraged FDEP to revise the State's dissolved oxygen criteria as well.

4.C FDEP PROPOSED WQS

Comment ID T0601.001.004

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 4.c

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

4. At present, Florida is in the process of revising its DO criteria. While it is recognized at this time that EPA cannot assess against these criteria and must utilize the existing criteria, some acknowledgement of the determinations that have been made and recorded by the Florida Department of Environmental Protection (FDEP) that the DO criteria are at issue and are being modified should be put into the TMDL report.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

Comment ID T0701.001.005

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 4.c

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

5. At present, Florida is in the process of revising its DO criteria. While it is recognized at this time that EPA cannot assess against these criteria and must utilize the existing criteria, some acknowledgement of the determinations that have been made and recorded by FDEP that the DO criteria are at issue and are being modified should be put into the TMDL report.

Response

EPA does acknowledge that Florida has begun the process of revising the State's dissolved oxygen criteria. When and if there is a new criteria EPA would expect that this TMDL would be re-evaluated.

Comment ID T0701.001.008

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 4.c

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

3. The data analyses presented for total nitrogen (TN) and total phosphorus (TP) do not indicate excessive nutrients are present. The mean and geometric mean for TN, TP and Chl a for the period between 2001 and 2010 based on IWR Run 45 are presented in the following table. <<See table in original comment letter.>> These values are less than the proposed West Central Florida inland numeric nutrient criteria of 1.65 mg/L for TN and 0.49 mg/L for TP and below the threshold for potential nutrient impairment of 20 µg/L for Chl a.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

4.D GENERAL/MISCELLANEOUS

5.B POINT SOURCES (MS4S)

5.C NONPOINT SOURCES (GENERAL)

6 ANALYTICAL APPROACH

6.A APPROACH METHODOLOGY

Comment ID T0509.001.002

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 6.a

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933), Myakka River (WBID 1981B), Mud Lake Slough (WBID 1958) and Cedar Creek (1926).>>

In all of the proposed TMDLs, modeling was utilized to determine loadings under "natural conditions," that is, setting all land use to "natural" to determine reductions necessary to achieve water quality targets. The EPA's conclusion in each of the proposed TMDLs is that even with all land use set as natural, the water quality target for dissolved oxygen would not be achieved. If the load allocations established in the TMDLs were intended to meet natural conditions, and those conditions will not achieve water quality targets, then no justification exists for the load reduction requirements.

Response

EPA determined that the State's dissolved oxygen criteria could not be met under natural conditions; the load allocations were consistent with the natural condition scenario. Because there is no assimilative capacity in the waterbody, no anthropogenic sources can contribute to any further decrease in dissolved oxygen.

Comment ID T0509.001.003

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 6.a

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933), Myakka River (WBID 1981B), Mud Lake Slough (WBID 1958) and Cedar Creek (1926).>>

Manatee County suggests the EPA recalibrate their model, particularly with regard to total phosphorus. The State of Florida's proposed Numeric Nutrient Criteria for TP in inland streams is 0.49 mg/L for this region. Modeling done for the TMDLs should incorporate a similar TP value to more accurately represent background conditions.

Response

Because the waterbody was on the 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen (see Section 62-302.530(47)(a), F.A.C.). If the waterbody met the State of Florida's dissolved oxygen standard a TMDL would not have been developed.

Comment ID T0609.001.005

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 6.a

<<The following comment applies to the TMDL for Myakka River (WBID 1981B).>>

The proposed Myakka River TMDL identifies land use in the watershed as 97% forested and water/wetlands. With the overwhelming majority of land use in the watershed identified as natural, the cause(s) of the perceived water quality impairments is not likely to be anthropogenic. With such a minor percentage of urbanized land use in this watershed, there is no action the county could take regarding its MS4 that would have any measurable effect on water quality in this watershed. The EPA should reevaluate the water quality modeling effort in this watershed to more accurately define background, or natural conditions.

Response

EPA does agree that most of the land use in the Myakka River TMDL is forest and wetlands. Because the waterbody does not meet the State's dissolved oxygen criteria a TMDL was developed that reduced loadings to background natural conditions. MS4s would be required to develop best management practice that would achieve the load reductions needed.

Comment ID T0701.001.004

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.a

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

4. The benefit of reducing nutrient load to the "natural" condition has not been demonstrated or justified by the model results presented.

Response

EPA determined that the State's dissolved oxygen criteria could not be met under natural conditions; the load allocations were consistent with the natural condition scenario. Because there is no assimilative capacity in the waterbody, no anthropogenic sources can contribute to any further decrease in dissolved oxygen.

6.B WATERSHED MODELING ASSUMPTIONS

6.C WATERSHED MODEL CALIBRATION

6.D WATER QUALITY MODELING ASSUMPTIONS

Comment ID T0601.001.010

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

3. The manner in which the kinetic rates presented in Table 4 of the model report are derived is not discussed. In particular, this model is very sensitive to sediment oxygen demand (SOD), but no supporting information on SOD rates in either the existing or natural condition is provided.

Response

EPA develops initial sediment oxygen demand (SOD) rates based upon field measurements that are representative of stream type and location. For the Myakka basin EPA Region 4's Field Services group had conducted measurements in the Myakka Basin. SOD rates are then modified slightly during the calibration process. For the TMDL scenario EPA utilizes a spreadsheet version of sediment diagenesis model to determine changes in SOD rates as a function of load reductions.

Comment ID T0701.001.015

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

3. The manner in which the kinetic rates presented in Table 4 of the model report are derived is not discussed. In particular, this model is very sensitive to sediment oxygen demand (SOD), but no supporting information on SOD rates in either the existing or natural condition are provided.

Response

See response to comment T0601.001.010

EPA develops initial sediment oxygen demand (SOD) rates based upon field measurements that are representative of stream type and location. For the Myakka basin EPA Region 4's Field Services group had conducted measurements in the Myakka Basin. SOD rates are then modified slightly during the calibration process. For the TMDL scenario EPA utilizes a spreadsheet version of sediment diagenesis model to determine changes in SOD rates as a function of load reductions.

6.E WATER QUALITY MODEL CALIBRATION

Comment ID T0701.001.016

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

4. The resultant DO time series for the existing condition bottoms out at zero in a number of places, suggesting a potential model instability or a problem with the calibration.

Response

The dissolved oxygen concentrations in the model simulations do fall to 0 or approach 0 mg/L dissolved oxygen, this occurs at very low or no flow conditions when there is very little reaeration.

6.F TMDL MODELING SCENARIOS

Comment ID T0601.001.003

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

3. The U.S. Environmental Protection Agency (EPA) prediction of "natural" condition loadings and in-stream nutrient concentrations is a critical aspect to this TMDL. More detail assessment of the reasonableness of the "natural" conditions needs to be provided.

Response

EPA realizes that the development of a natural condition scenario is very difficult to do, because of hydraulic modifications and drastic changes in landuse in Florida throughout history. EPA typically develops at least two natural condition scenarios: 1) split the anthropogenic landuses evenly into upland forests and wetlands 2) divide the anthropogenic landuse using the current ration of wetlands to forests.

Comment ID T0701.001.003

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

3. The U.S. Environmental Protection Agency (EPA) prediction of "natural" condition loadings and in-stream nutrient concentrations is a critical aspect to this TMDL. More detailed assessment of the reasonableness of the "natural" conditions needs to be provided.

Response

See response to comment T0601.001.003

EPA realizes that the development of a natural condition scenario is very difficult to do, because of hydraulic modifications and drastic changes in landuse in Florida throughout history. EPA typically develops at least two natural condition scenarios: 1) split the anthropogenic landuses evenly into upland forests and wetlands 2) divide the anthropogenic landuse using the current ration of wetlands to forests.

Comment ID T0701.001.017

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

5. It is not possible to distinguish between the existing and natural conditions DO in Figure 9. A difference graph would be more useful.

Response

Comment noted. The figure will be updated in the report.

6.F.1 NATURAL CONDITION

Comment ID T0601.001.009

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f.1

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

2. The report presents the results of the natural condition simulations where anthropogenic land uses were changed to natural conditions. The changes in loads are listed in Tables 6 and 7. The model-predicted natural condition is arrived at through the assumption that the event mean concentrations (EMCs) represent the natural loading to this system. Given some of the earlier discussions relative to the health of the system, and its "natural" condition, it is important for EPA to clearly show that the identified "natural" condition loadings and in-stream concentrations make sense.

Response

See response to comment T0601.001.003

EPA realizes that the development of a natural condition scenario is very difficult to do, because of hydraulic modifications and drastic changes in landuse in Florida throughout history. EPA typically develops at least two natural condition scenarios: 1) split the anthropogenic landuses evenly into upland forests and wetlands 2) divide the anthropogenic landuse using the current ration of wetlands to forests.

Comment ID T0701.001.014

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f.1

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

2. The report presents the results of the natural condition simulations where anthropogenic land uses were changed to natural conditions. The changes in loads are listed in Tables 6 and 7. The model-predicted natural condition is arrived at through the assumption that the modeled runoff concentrations represent the natural loading to this system. Given some of the earlier discussions relative to the health of the system, and its "natural" condition, it is important for EPA to clearly show that the identified "natural"

condition loadings and in-stream concentrations make sense.

Response

See response to comment T0601.001.003

EPA realizes that the development of a natural condition scenario is very difficult to do, because of hydraulic modifications and drastic changes in landuse in Florida throughout history. EPA typically develops at least two natural condition scenarios: 1) split the anthropogenic landuses evenly into upland forests and wetlands 2) divide the anthropogenic landuse using the current ration of wetlands to forests.

Comment ID T0701.001.018

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.f.1

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

6. It does not appear that "reductions" to the natural condition will result in substantive improvements to the DO (average increasing from 7.7 to 8.0 mg/L).

Response

While this is true, there is a difference between the current and natural condition. This is an indication that anthropogenic sources are causing a depression in dissolved oxygen.

6.G GENERAL/MISCELLANEOUS MODEL

Comment ID T0601.001.002

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

2. There is a significant amount of information missing from the TMDL report regarding how the modeling was performed and, as such, a complete review of the model and its assumptions is not possible.

Response

EPA provides a modeling report that provides most information that is needed to review model performance. Furthermore the model(s) and the inputs are available for review.

Comment ID T0601.001.008

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

1. The modeling report states that the model was calibrated to U.S. Geological Survey (USGS) flow gage 02298608, but no flow information or calibration is presented. This needs to be presented to demonstrate that the model is adequately simulating flow conditions.

Response

The flows that were used are part of the model inputs which are available to the public upon request. The performance of the water quality model is indicative of the flows being adequately characterized.

Comment ID T0601.001.011

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

4. Calibration information on the boundary flows for the WASP model that were taken from the predicted flows of the MikeShe/Mike11 model developed by the Southwest Florida Water Management District should be provided.

Response

The flows that were used are part of the model inputs which are available to the public upon request. The performance of the water quality model is indicative of the flows being adequately characterized.

Comment ID T0601.001.012

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

5. The model report does not present sufficient information regarding how the EMCs were adjusted in order to calibrate the model. The model was not calibrated in WBID 1933 using data from the dairy station, yet this is the station where the water quality problems are occurring.

Response

Depending upon the waterbody and size of the WBID, EPA typically uses the downstream station to calibrate the water quality model. This is done because the downstream stations are most representative of the impacts of all the loads coming in from upstream and the surrounding watershed.

Comment ID T0601.001.013

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933) and Myakka River (WBID 1981B).>>

6. In general, the model report does not provide sufficient details related to model construction or calibration to facilitate a thorough evaluation and verification of the model results.

Response

See response to comment T0601.001.002

EPA provides a modeling report that provides most information that is needed to review model performance. Furthermore the model(s) and the inputs are available for review.

Comment ID T0701.001.002

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

2. There is a significant amount of information missing from the TMDL report regarding how the modeling was performed and, as such, a complete review of the model and its assumptions is not possible.

Response

See response to comment T0601.001.002

EPA provides a modeling report that provides most information that is needed to review model performance. Furthermore the model(s) and the inputs are available for review.

Comment ID T0701.001.013

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

1. The modeling report references a flow gage at Bud Slough that is used in the model calibration and development, but no flow information is presented.

Response

See response to comment T0601.001.011

The flows that were used are part of the model inputs which are available to the public upon request. The performance of the water quality model is indicative of the flows being adequately characterized.

Comment ID T0701.001.019

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.g

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

7. In general, the model report does not provide sufficient details related to model construction or calibration to facilitate a thorough evaluation and verification of the model results.

Response

See response to comment T0601.001.002

EPA provides a modeling report that provides most information that is needed to review model performance. Furthermore the model(s) and the inputs are available for review.

7.A.1 WLA ALLOCATIONS

Comment ID T0709.001.001

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 7.a.1

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1981B).>>

The proposed Mud Lake Slough TMDL identifies only 2.1 percent urbanized land use in the watershed. A smaller percentage of that urbanized land use actually consists of stormwater conveyance systems maintained by the county. With such a minor percentage of county-maintained stormwater systems, there is no action the county could take regarding its MS4 that would have any measurable effect on water quality in this watershed.

Response

See response to comment T0609.001.005

EPA does agree that most of the landuse in the Myakka River TMDL is forest and wetlands. Because the waterbody does not meet the State's dissolved oxygen criteria a TMDL was developed that reduced loadings to background natural conditions. MS4s would be required to develop best management practice that would achieve the load reductions needed.

Comment ID T0709.001.002

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 7.a.1

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1981B).>>

The summary sheet (Page i) of the EPA's TMDL for Mud Lake Slough contains a chart indicating that the load allocation to MS4 permit(s) is N/A (not applicable). The chart presented as Table 9 on Page 27 of the TMDL indicates otherwise.

Response

The summary page will be updated to reflect the percent reduction that will be required of MS4 areas.

7.D ALLOCATION METHODOLOGY

Comment ID T0509.001.004

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 7.d

<<The following comment applies to the TMDLs for Owen Creek (WBID 1933), Myakka River (WBID 1981B), Mud Lake Slough (WBID 1958) and Cedar Creek (1926).>>

Manatee County's Stormwater Management Plan (SWMP) was approved by the EPA under its initial NPDES permit (#FLS000036) in 1997. The SWMP was designed to address stormwater runoff from the urbanized regions of the county as defined by the United States Census. The extent of this boundary is illustrated in Figure 1 (attached). As shown in Figure 1, the Owen Creek, Myakka River, Mud Lake Slough watersheds all lie outside of the county's SWMP boundary. Load allocation reductions should not be assigned to the county's MS4 permit in watersheds that are not within the county's SWMP because the County has no jurisdiction in these areas to implement load reductions

Response

The MS4 coverage and permits for Florida are typically done by county and co-permittees. It is very difficult to determine contributing areas. If Manatee County can document that the drainage area in this TMDL is not part of the MS4 service area then the county would not be required to implement any BMPs.

Comment ID T0609.001.003

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 7.d

<<The following comment applies to the TMDL for Owen Creek (WBID 1933).>>

The data reported for Station 24943 clearly indicate that the Owen Creek watershed is impaired because of runoff from the tributary monitored by Station 25943. This tributary drains a subwatershed containing a large dairy farm (Cameron Dakin Dairy), which has a FDEP Industrial Wastewater permit (FLA182699). A map of the watershed, including the location of property owned by the dairy, is

included as Figure 2. The EPA did not assign a Waste Load Allocation to FDEP Industrial Waste permit #FLA182699 "because these facilities should not discharge, except under rare and extreme precipitation events, no WLA is reserved for either facility" (Section 8.3.1). The TMDL does not address other sources of potential nutrient loadings from this type of land use, such as onsite wastewater irrigation, land application of manure, or impacted groundwater discharge. Water quality data suggest that management practices at the dairy are either insufficient or are not working.

Response

EPA encourages further investigation of source of nutrients that can be controlled. This TMDL can be re-visited once new information becomes available. EPA used the best information available at this time to develop the TMDL.

Comment ID T0609.001.004

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 7.d

<<The following comment applies to the TMDL for Owen Creek (WBID 1933).>>

Water quality improvements in the Owen Creek watershed will require addressing the source of the high nutrient concentrations detected at Station 21SWFD25943. The TMDL should be modified to assign a Waste Load Allocation (WLA) to the existing wastewater permit or non-point sources in the monitored subwatershed. <<See figure in original comment letter.>>

Response

The dairy farm in the basin has a zero discharge permit; which is why there is no allocation. EPA encourages the county during the implementation of this TMDL to investigate major sources of nutrients in the basin. EPA used the best information available at this time to develop the TMDL.

9.A WATER QUALITY MONITORING DATA

Comment ID T0609.001.001

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 9.a

<<The following comment applies to the TMDL for Owen Creek (WBID 1933).>>

The Owen Creek (WBID 1933) TMDL was determined utilizing data from three (3) sampling stations located within the watershed. Water quality data clearly indicates an overwhelming amount of water quality standard exceedances occurred at one station (21FLSWFD25943) located on a southern tributary to Owen Creek. In fact, all 16 of the measurements reported for this station exceeded the dissolved oxygen (DO) standard of 5 mg/L. Conversely, the DO standard was exceeded in only 4 of the 27 measurements reported from the remaining two monitoring stations in the watershed. This number of exceedences is below the state's threshold for impairment (Chapter 62-303 Florida Administrative Code).

Response

EPA must review all data for a WBID to determine whether a TMDL must be developed or not. When assessing all the data for the WBID EPA determined that a TMDL had to be developed to meet the requirements of the Florida TMDL consent decree.

Comment ID T0609.001.002

Author Name: Hunsicker Charles

Organization: Manatee County

Issue Category: 9.a

<<The following comment applies to the TMDL for Owen Creek (WBID 1933).>>

For nutrients, 9 of the 15 data points reported for total nitrogen at Station 25943 exceeded 20 mg/L. These concentrations represent an extreme departure from the normal range for TN of 1 to 3 mg/L in this region (the proposed numeric nutrient criteria for this region is 1.65 mg/L). A radical departure from normal measurements was also reported for total phosphorus (TP) at the 25943 station; every measurement of TP from this station exceeded 5 mg/L. With the exception of one measurement, all TP measurements at the remaining two stations were reported less than 1 mg/L.

Response

Comment noted.

10 GENERAL EDITS

Comment ID T0701.001.006

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 10

<<The following comment applies to the TMDL for Mud Lake Slough (WBID 1958).>>

1. Figures 4 through 8, which present the existing water quality data, are not legible.

Response

The document will be updated with new figures.